



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/821,695	03/29/2001	Mikio Saito	9319S-000195	9201
27572	7590	09/14/2005	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303				BALI, VIKKRAM
ART UNIT		PAPER NUMBER		
		2623		

DATE MAILED: 09/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/821,695	SAITO ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Vikkram Bali	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 27 April 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-12 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/25/2005
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/27/2005 has been entered.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 3-4 and 9 as best understood are rejected under 35 U.S.C. 103(a) as being unpatentable over Broadbent, Jr. et al (US 4555798) in view of Ferguson et al (US 6327033).

With respect to claim 1, Broadbent discloses a system for inspecting holes that includes irradiating light from one side of a work piece having holes, detecting passing light by imaging the passing light from another side of the work piece, examination by imaging an imaging focal point of the sensor camera being shifted with respect to a surface of the work piece, (see figure 2, numerical 44 as light source from one side of numerical 34 mask "work piece" and photodiode for imaging on the other side and numerical 68 for shifting the sensor relative to the table numerical 32) as claimed. However, he fails to disclose the distance greater than a focal length of the sensor camera, as claimed. Ferguson teaches a scanning and inspecting the articles in that the distance greater than a focal length of the sensor camera (see figure 11 the image taken at negative and positive focus) as claimed. It would have been obvious to one ordinary skilled in the art at the time of invention to combine the two references as they are analogous because they are solving similar problem of inspection with the optical apparatus. The variation in the optics in order to image the surface provides a improve system to image the surface (see Ferguson col. 4, lines 13-17) as motivation.

With respect to claim 3, he further discloses shifting camera relative and in parallel with the work piece, (see numerical 68 Y direction drive that drives the sensor parallel and relative to the work piece) as claimed.

With respect to claim 4, it is well known and conventionally used in the art of through holes inspection to have the expanded image at a high level of magnification. Therefore, It would have been obvious to one ordinary skilled in the art at the time of invention to use the expanded image of the through holes as it is well known and conventionally use in the inspection of the through holes.

With respect to claim 9, Ferguson further teaches out of focus condition, (see figure 11, the two images 750 and 770 are out of focus one is negative and other is positive focus) as claimed.

6. Claims 2, 5-8 and 10-12 as best understood are rejected under 35 U.S.C. 103(a) as being unpatentable over Broadbent, Jr. et al (US 4555798) in view of Ferguson et al (US 6327033) and in further view of Onishi et al (US 5347591).

With respect to claim 5, Broadbent a light source, a sensor camera, a table on which a work piece with holes is mounted between the light source and the sensor, sensor imaging light source passing through the holes, relative motion of the sensor to the work piece, (see figure 2, numerical 44 as light source from one side of numerical 34 mask "work piece" with holes, photodiode numerical 46 "sensor" for imaging on the other side and numerical 68 for shifting the sensor relative to the table numerical 32, having the "work piece" numerical 34 mounted on it, and numerical 68 Y direction drive that drives the sensor parallel and relative to the work piece) as claimed. However, he fails to disclose the distance greater than a focal length of the sensor camera, as claimed. Ferguson teaches a scanning and inspecting the articles in that the distance

greater than a focal length of the sensor camera (see figure 11 the image taken at negative and positive focus) as claimed. It would have been obvious to one ordinary skilled in the art at the time of invention to combine the two references as they are analogous because they are solving similar problem of inspection with the optical apparatus. The variation in the optics in order to image the surface provides a improve system to image the surface (see Ferguson col. 4, lines 13-17) as motivation.

However, Broadbent and Ferguson fail to disclose comparing imaged areas provided by the sensor camera, as claimed. Onishi in through holes inspection system teaches comparing imaged areas provided by the sensor camera, (see col. 6, lines 25-29) as claimed.

It would have been obvious to one ordinary skilled in the art at the time of invention to combine the references as they are analogous because they are solving similar problem of through hole inspection. The feature of comparing images can easily be incorporated into the computer of Broadbent's and Ferguson's system numerical 58 of figure 2, in order to compare the images of the holes to detect any defects in the through holes.

Claim 2 is rejected for the same reasons as set forth in the rejection of claim 5, because claim 2 is claiming subject matter similar to claim 5.

Claims 6 and 7 are is rejected for the same reasons as set forth in the rejection of claim 3, because claims 6 and 7 are claiming subject matter similar to claim 3.

Claim 8 is rejected for the same reasons as set forth in the rejection of claim 4, because claim 8 is claiming subject matter similar to claim 4.

Art Unit: 2623

Claims 10-12 are rejected for the same reasons as set forth in the rejection of claim 9, because claims 10-12 are claiming subject matter similar to claim 9.

***Response to Arguments***

Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vikkram Bali whose telephone number is 571.272.7415. The examiner can normally be reached on 7:00 AM - 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 571.272.7414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vikkram Bali  
Primary Examiner  
Art Unit 2623

vb  
September 12, 2005